

SUPPORT FOR THE AMENDMENTS

The present amendment cancels claims 12 and 14, and amends claim 11.

Amended claim 11 incorporates therein the limitations of now cancelled claims 12 and 14. Support for the amendment to claim 11 is found at specification page 4, lines 15-25, and page 5, lines 1-25, as well as original claims 1-3. It is believed that these amendments have not resulted in the introduction of new matter.

REMARKS

Claims 11, 13 and 15-30 are currently pending in the present application. Claims 12 and 14 have been cancelled, and claim 11 has been amended, by the present amendment.

Applicants wish to extend their appreciation to Examiner Ahvazi for: (1) withdrawing the rejections under 35 U.S.C. § 112, first paragraph (written description) and 103(a); and (2) indicating on page 10 of the Official Action that claim 26 contains allowable subject matter.

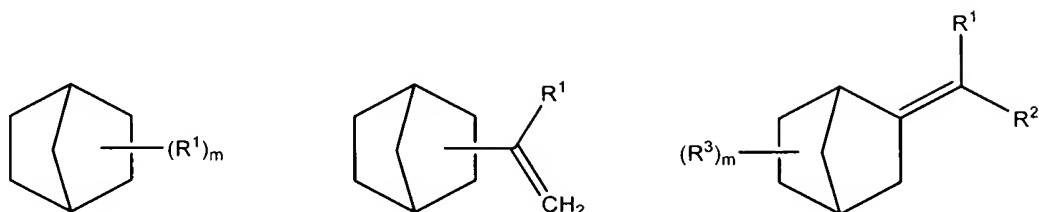
The rejections under 35 U.S.C. § 103(a) of: (1) claims 11, 14-21 and 30 as being obvious over Tanaka (U.S. Patent 4,789,490) in view of Yerina (Rubber Chemistry and Technology); (2) claims 12 and 13 as being obvious over Tanaka in view of Yerina and Sergeev (SU 168825); and (3) claims 22-25 and 29 as being obvious over Tanaka in view of Yerina and Weippert (U.S. Patent 5,817,256); (4) claim 27 as being obvious over Tanaka in view of Yerina, Weippert and Sacher (U.S. Patent 4,526,711); and (5) claim 28 as being obvious over Tanaka in view of Yerina, Weippert and Hirth (U.S. Patent 4,559,147), are respectfully traversed with respect to claims 11, 13 and 15-30.

Amended claim 11 recites an oil composition comprising:

a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene; and

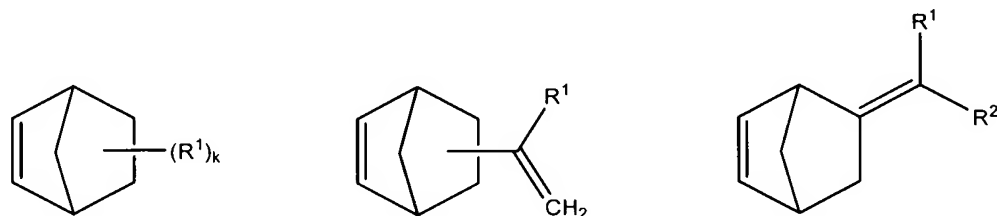
a liquid diene-based polymer having a number average molecular weight of 300 to 100,000, wherein said liquid diene-based polymer is neither a liquid diene-based polymer of said norbornane, nor a liquid diene-based polymer of said norbornene,

wherein said hydrogenation product of a monomer to a tetramer of at least one compound of said norbornane is present within said oil composition and is represented by any of the following general formulae:



wherein R^1 , R^2 and R^3 each independently represent a hydrogen atom or an alkyl group having 1 to 10 carbon atoms, and m represents an integer of 1 to 3;

wherein said hydrogenation product of a monomer to a tetramer of at least one compound of said norbornene is present within said oil composition and is represented by any of the following general formulae:



wherein R^1 and R^2 each independently represent a hydrogen atom or an alkyl group having 1 to 10 carbon atoms, and k represents an integer of 1 to 3; and

wherein said oil composition is an immersion oil for a microscope.

Tanaka, Yerina, Sergeev, Weippert, Sacher and Hirth, when considered alone or in combination, fail to disclose or suggest an oil composition comprising a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene, as presently claimed.

Unlike the claimed invention, Tanaka describes an immersion oil composition for a fluorescent microscope comprising: a liquid dienic polymer (e.g., liquid polybutadiene, liquid polyisoprene, liquid polychloroprene) having a number average molecular weight of 500 to 20,000, preferably 1,000 to 15,000; and optionally polybutene (i.e., a homopolymer of 1-butene, trans-2-butene, cis-2-butene or isobutylene, or a copolymer of said monomer with another monomer), wherein the immersion oil composition exhibits a reduced fluorescence emission

under excitation with ultraviolet light (See e.g., abstract, column 1, lines 12-15 and 46-66, column 2, lines 15-28, 42-46 and 63-68).

As acknowledged on page 4, lines 4-6 of the Official Action, Tanaka fails to disclose or suggest an oil composition comprising a hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene, as presently claimed.

Yerina and Sergeev fail to compensate for the above-mentioned deficiencies of Tanaka,

Unlike the claimed invention, Yerina describes utilizing visual images obtained from atomic force microscopy (AFM) and electric force microscopy (EFM) for investigating morphology changes of ethylene propylene diene monomer (EPDM) rubber materials attributable to the incorporation of various fillers (e.g., carbon black, silica particles) and oils therein (See e.g., page 846, abstract and introduction). Yerina describes a commercial oil-extended ethylene propylene diene (EPDM) terpolymer rubber material marketed by Polimeri Europa under the trade name Dutral® TER, which contains therein 5-ethylidene-2-norbornene, as evidenced by the enclosed Polimeri Europa internet publication and STN (ACS) publication (See e.g., page 850, materials).

The claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene is fundamentally different from the ethylene propylene diene (EPDM) terpolymer rubber material containing 5-ethylidene-2-norbornene described in Yerina. Unlike the claimed tetramerized hydrogenation product of a norbornane and a norbornene of the present invention, the ethylene propylene diene (EPDM) terpolymer of Yerina is a non-hydrogenated rubber material containing three distinct monomer units, namely ethylene, propylene and 5-ethylidene-2-norbornene. Since Yerina fails to disclose or suggest a tetramer consisting of four identical hydrogenated monomer units of a norbornane and a norbornene, Yerina fails to render obvious the oil composition of the present invention.

Unlike the claimed invention, Sergeev describes an immersion oil for an achromatic microscope lens, wherein the immersion oil comprises camphene derivatives of o-cresol and methoxyphenol (See e.g., abstract and structural formulae).

The claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene is fundamentally different from the camphene derivatives of o-cresol and methoxyphenol described in Sergeev. Unlike the claimed tetramerized hydrogenation product of a norbornane and a norbornene of the present invention, the camphene derivatives of o-cresol and methoxyphenol described in Sergeev are non-tetramerized compounds having a fundamentally different structural formula from the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene of the present invention. Since Sergeev fails to disclose or suggest a tetramer consisting of four identical hydrogenated monomer units of a norbornane and a norbornene, Sergeev fails to render obvious the oil composition of the present invention.

The mere possibility that the ethylene propylene diene (EPDM) terpolymer rubber material containing 5-ethylidene-2-norbornene described in Yerina and/or the camphene derivatives of o-cresol and methoxyphenol described in Sergeev could be modified to arrive at the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene of the present invention is an insufficient ground for arriving at a supportable conclusion of unpatentability.

A prima facie case of obviousness requires that the cited reference provide a skilled artisan with sufficient motivation and guidance to make the proposed molecular modifications needed to arrive at the claimed compounds. See e.g., MPEP § 2144.08(II)(A)(4), *Takeda v. Alphapharm*, 83 USPQ2d 1169, 1174 (Fed. Cir. 2007) and *In re Lalu*, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1984).

Yerina and Sergeev, when considered alone or in combination, fail to disclose or suggest making the required molecular modifications to the ethylene propylene diene (EPDM) terpolymer rubber material containing 5-ethylidene-2-norbornene described in Yerina and the camphene derivatives of o-cresol and methoxyphenol described in Sergeev, to arrive at the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene of the present invention, thereby precluding a prima facie case of obviousness.

As a result, Tanaka, Yerina and Sergeev, when considered alone or in combination, fail to render obvious the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene of the present invention.

Weippert, Sacher and Hirth fail to compensate for the above-mentioned deficiencies of Tanaka, Yerina and Sergeev.

Weippert describes an immersion oil for a microscope comprising a plethora of various optional components including, but not limited to, butyl benzyl phthalate and dibenzyl ether (See e.g., column 2, lines 43-44, column 7, Table II, Example 7).

Sacher describes a liquid optical coupling material and mounting media for microscopy comprising a brominated diphenyl oxide, an α -methylstyrene polymer and a substituted 2-hydroxy benzophenone (See e.g., abstract, claims 1 and 5).

Hirth describes an optical immersion oil for fluorescence microscopy comprising one or more glycerol 1,2-carbonate compounds according to the formula (I) described therein, which are soluble in various organic solvents including, but not limited to, benzene and xylene (See e.g., abstract, column 1, lines 5-8 and 66-67, column 1, lines 1-9, column 3, lines 23-29).

Applicants submit that a skilled artisan would not have arrived at the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the

group consisting of a norbornane and a norbornene of the present invention, based on the limited disclosures of Tanaka, Yerina, Sergeev, Weippert, Sacher and/or Hirth, absent impermissible hindsight reconstruction.

Assuming arguendo that sufficient motivation and guidance is considered to have been provided by Tanaka, Yerina, Sergeev, Weippert, Sacher and/or Hirth to direct a skilled artisan to arrive at the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene of the present invention, which is clearly not the case, such a case of obviousness is rebutted by a showing of superior properties and secondary considerations.

As discussed in the present specification, conventional oil compositions for fluorescent microscopy exhibit an undesirably strong fluorescence under excitation with ultraviolet light thereby reducing the accuracy of detection of specimens that exhibit a weak fluorescence when irradiated with ultraviolet light (See e.g., page 1, lines 21-26, page 2, lines 1-14). Accordingly, there has been a long-felt need to provide an oil composition that exhibits reduced fluorescence under excitation with ultraviolet light to enable an increased accuracy of detection of specimens that exhibit a weak fluorescence when irradiated with ultraviolet light, while maintaining excellent other properties of an immersion oil for microscopy, including refractive index, Abbe number and viscosity, for example.

As discussed in the present specification and shown by the comparative experimental data presented in Tables 1 and 2 therein, Applicants have discovered that in addition to exhibiting excellent properties including refractive index, Abbe number and viscosity, a superior property with respect to remarkably reduced fluorescence under excitation with ultraviolet light is exhibited by the oil compositions of Examples 1-5 comprising the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene in accordance with the present invention.

In contrast, the conventional oil compositions of Comparative Examples 1-3, which do not contain the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene of the present invention, exhibit an inferior property of undesirably strong fluorescence.

This evidence clearly demonstrates that oil compositions comprising the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene in accordance with the present invention exhibit a superior property with respect to remarkably reduced fluorescence under excitation with ultraviolet light, as compared to the inferior property of undesirably strong fluorescence exhibited by conventional oil compositions, which do not contain the claimed hydrogenation product of a monomer to a tetramer of at least one compound selected from the group consisting of a norbornane and a norbornene of the present invention.

Withdrawal of these grounds of rejection is respectfully requested.

In conclusion, Applicants submit that the present application is now in condition for allowance and notification to this effect is earnestly solicited.

Respectfully submitted,

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